BISS Biodiversity Information Science and Standards

Biodiversity Information Science and Standards 9: e173953
doi: 10.3897/biss.9.173953

OPEN ACCESS

Conference Abstract

Designing Policy Interfaces: Spatial Data Usability and Interactive Governance in a Marine Protected Area

Folco Soffietti‡, Gianni Sinni‡, Francesco Musco‡

‡ Iuav University of Venice, Venice, Italy

Corresponding author: Folco Soffietti (fsoffietti@iuav.it)

Received: 04 Oct 2025 | Published: 16 Oct 2025

Citation: Soffietti F, Sinni G, Musco F (2025) Designing Policy Interfaces: Spatial Data Usability and Interactive Governance in a Marine Protected Area. Biodiversity Information Science and Standards 9: e173953. https://doi.org/10.3897/biss.9.173953

Abstract

1. Introduction

Digital transformation is reshaping how environmental governance documents are communicated, accessed, and used. Marine spatial planning (MSP), increasingly adopted across Europe to coordinate sea uses through ecosystem-based and integrated approaches (Zaucha et al. 2025), is framed by Directive 2014/89/EU on MSP (European Union 2014) and relies on interoperable spatial data infrastructures, as promoted by the Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) (European Union 2007). In France, the evolving relationship between Marine Protected Areas (MPAs) and MSP reflects complex institutional and spatial dynamics (Trouillet 2020, Trouillet and Jay 2021). In this context, the authority of the Parc naturel marin de l'estuaire de la Gironde et de la mer des Pertuis transposed its management plan into an interactive web platform. This study examines the design, usability, and governance value of this portal, asking how digital design and spatial data management align with EU MSP standards and human-centred design principles.

© Soffietti F et al. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

2. Employed Methodology

1. **Document analysis** of the official management plan (Office Français de la Biodiversité 2018), its cartographic annexes, and the SIMAtlantic (Supporting the Implementation of Maritime Spatial Planning in the Atlantic) report describing the web tool's development (Alloncle et al. 2021).

2. **Semi-structured expert interview** with a former officer of the French Office for Biodiversity, focusing on motivations, target users, legal relationships, participatory processes, technical choices, and reflections on governance value.

3. **Systematic exploration** of the portal, guided by usability and user-experience literature (Soares et al. 2022) and ISO 9241-210:2019 standards (International Organization for Standardization (ISO) 2019).

3. Results

The portal is not a legal document but an interactive translation of the official plan. The paper plan remains the regulatory reference, while the website serves communicative and operational purposes for key stakeholders.

The platform uses a dual-screen layout: a left pane with a Web-GIS viewer and a right pane with factsheets. Users explore ecological, socio-economic, and governance stakes (*enjeux*), objectives (*finalités*), actions, and monitoring protocols. Relational links connect goals, measures, and cartography. Exportable maps and shareable URLs enable decision-making uses.

Developed in the framework of the SIMAtlantic project (Alloncle et al. 2021), the portal addresses challenges of lengthy, static marine plans: opacity, updateability, and difficulty in visualising spatial interactions. Its value lies in making governance rationale visible.

The portal balances functionality and simplicity. It aligns with ISO 9241-210:2019 principles (International Organization for Standardization (ISO) 2019), being task-oriented and accessible. Digital features include real-time exploration, overlays of ecological and socio-economic variables, and relational navigation between management elements. Yet, fixed layout and performance issues can hinder mobile or low-bandwidth users.

4. Discussion and conclusion

The Gironde portal illustrates a new genre of digital planning artefacts, which both visualises and operationalises spatial strategies. Its relational architecture reinforces the interconnectedness of stakes, objectives, and actions in a transparent way. It demonstrates how digital tools can recalibrate legal design and governance: although not binding, the portal fosters legal consciousness by making planning rationales traceable and accessible (Trouillet 2020). In fact, its design has altered how planning is accessed.

This hybrid status—between normativity and informativity (Pasa and Sinni 2024)—mirrors debates in legal design and digital governance. The platform also shows how MSP and MPA governance can converge through shared digital infrastructures (Trouillet and Jay 2021), accommodating multiple user typologies and aligning with EU MSP implementation challenges (Zaucha et al. 2025). Importantly, it confirms that design is not merely aesthetic: usability and cognitive load management (Soares et al. 2022) are fundamental to making spatial planning understandable and actionable. Relational navigation and modular presentation have made complex governance strategies more accessible and transparent. The case suggests that digital infrastructures may improve policy accessibility. This hybrid nature demands further study, particularly on how trust, accountability, and participation evolve when policy artefacts become interactive infrastructures.

Keywords

ocean data, UX design, interactive design, environmental management, maritime spatial planning

Presenting author

Folco Soffietti

Presented at

Living Data 2025

Funding program

Part of the applied research was conducted within the ReMAP project, which has received funding from the European Maritime and Fisheries and Aquaculture Fund.

Conflicts of interest

The authors have declared that no competing interests exist.

References

- Alloncle N, Crampe C, Odion M, et al. (2021) Stakeholder Ownership of Maritime Plans: Perspectives Created by Web-Based Solutions A Web Portal to Communicate the Management Plan of the “Mer des Pertuis et Estuaire de la Gironde” Marine Nature Park.

SIMAtlantic Project Report. URL: https://www.marei.ie/wp-content/uploads/2023/02/D2.2-Stakeholder-ownership-of-maritime-spatial-plans.pdf

- European Union (2007) Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 Establishing an Infrastructure for Spatial Information in the European Community (INSPIRE). Official Journal of the European Union. URL: https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32007L0002
- European Union (2014) Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 Establishing a Framework for Maritime Spatial Planning. Official Journal of the European Union. URL: https://eur-lex.europa.eu/eli/dir/2014/89/oj/eng
- International Organization for Standardization (ISO) (2019) ISO 9241-210:2019. Ergonomics of Human-System Interaction—Part 210: Human-Centred Design for Interactive Systems. URL: https://www.iso.org/standard/77520.html
- Office Français de la Biodiversité (2018) https://plan-gestion.parc-marin-gironde-pertuis.fr/
- Pasa B, Sinni G (2024) New Frontiers of Legal Knowledge: How Design Prototypes Can Contribute to Legal Change in Designs for Law. Ledizioni URL: https://www.torrossa.com/en/resources/an/5826118#page=27
- Soares MM, Rebelo F, Ahram TZ (Eds) (2022) Handbook of Usability and User Experience: Methods and Techniques. CRC Press https://doi.org/10.1201/9780429343513
- Trouillet B (2020) Reinventing Marine Spatial Planning: A Critical Review of Initiatives Worldwide. Journal of Environmental Policy & Planning https://doi.org/10.1080/1523908X.2020.1751605
- Trouillet B, Jay S (2021) The Complex Relationships between Marine Protected Areas and Marine Spatial Planning: Towards an Analytical Framework. Marine Policy 127: 104441. https://doi.org/10.1016/j.marpol.2021.104441
- Zaucha J, Gee K, Ramieri E, Neimane L, et al. (2025) Implementing the EU MSP Directive: Current Status and Lessons Learned in 22 EU Member States. Marine Policy 171: 106425. https://doi.org/10.1016/j.marpol.2024.106425